

Walkera DEV0 8s

Hardware Definition and Upgrades - Version 1.1

2013-04-14

This document borrows generously from information on this site plus some specifics from Randmental, RBE2012 and Hubi-dirk

The following documents the hardware inside the Devo-8 transmitter.

Devo8s Major components

MCU/CPU: [STM32F103VCT6](#) 256kB Flash, 48kB RAM 100pin package

SPI Flash: [SST25VF032B](#) 4MB SPI NOR Flash

LCD Display: [HX8347-D](#) 320x240x18bit QVGA

Touch Sensor: [TSC2008](#) SPI touch sensor

Radio: [CYRF6936](#) 2.4GHz

STM32 Connections

BOOT0: CON2

NRST: Debugger (NRESET)

GPIO A:

1: Buzzer

2: output to 0 to shut off Tx???

3: power-switch in 'off' position (goes high on 'off')

4: (ADC12_IN_4) Not Used in Devo 8 **(AUX5 Analogue input - PIN 29)**

5 (SPI1_SCK): SPI Flash, TSC2008

6 (SPI1_MISO): SPI Flash, TSC2008

7 (SPI1_MOSI): SPI Flash, TSC2008

9 (USART1_TX): Trainer Rx?

10 (USART1_RX): Trainer Tx?

11 (USBDM): USB+

12 (USBDP): USB-

13 (SWDIO): Debugger SWDIO (TMS)

14 (SWCLK): Debugger SWCLK (TCK)

GPIO B:

0: TSC2008 Chip-Enable

1: LCD Module (Backlight control?)

2 (BOOT1): SPI Flash Chip-Enable

5: TSC2008 Pin 15 Pen/Irq

6: Button Matrix Col 1

7: Button Matrix Col 2

8: Button Matrix Col 3

9: Button Matrix Col 4

10: USB Enable (enable Low)

11: TxModule pin 10 - CYRF6936 Reset

12 (SPI2_NSS?): TxModule pin 1

13 (SPI2_SCK?): TxModule pin 3

14 (SPI2_MISO?): TxModule pin 9

15 (SPI2_MOSI?): TxModule pin 7

GPIO C:

0 (ADC123_IN_10): Elevator Stick

1 (ADC123_IN_11): Rudder Stick

2 (ADC123_IN_12): Aileron Stick

3 (ADC123_IN_13): Throttle Stick

4 (ADC12_IN_14): Battery Voltage

5 (ADC12_IN_15): Not Used in Devo 8s

6: Gear Switch

7: Elevator D/R Switch

8: Rudder D/R Switch

AUX4 Analogue input - PIN 34

- 9: FMode 0 Switch
- 10: FMode 2 Switch
- 11: Aileron D/R Switch
- 12: Mix 0 Switch
- 13: Mix 2 Switch
- 14: Charging (Active Low)
- 15: Powered by Outlet (Active Low)

GPIO D:

- 0-1: LCD Module
- 2: Not Used in Devo8s **Vibration Motor - PIN 83**
- 4-5: LCD Module
- 7-11: LCD Module
- 14-15: LCD Module

GPIO E:

- 2-6: Button Matrix Rows
- 7-15: LCD Module

Devo 10 Button Matrix				
	B.6	B.7	B.8	B.9
E.2	L-	DN-	NC	Elev Trim Down
E.3	R+	UP+	Top Right TD	Throttle Trim Up
E.4	Ent	Ext	Top Right TU	Elev Trim Up
E.5	Ail TR	Rudder TL	Top Left TD	NC
E.6	Ail TL	Rudder TD	Top Left TU	Throttle Trim Down

TL: Trim Left
TU: Trim Up

TR: Trim Right
TD: Trim Down

General Notes

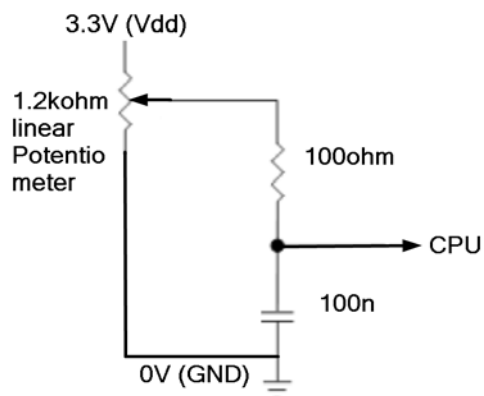
The GPIOs (general purpose input/outputs) of the STM32F104 can sink or source up to +/-8 mA, and sink or source up to +/- 20 mA (with a relaxed VOL/VOH). In the user's application, the number of I/O pins which can drive current must be limited to respect the absolute maximum rating specified in Section 5.2 of ST document CD00191185.pdf

Devo8s Analogue design

The existing potentiometers for the sticks are 1.2k ohm linear types. They are fed with 3.3Volt, sliders go to the CPU pins via 100ohm resistor with a 100nF capacitor to ground as protections and a 16kHz RC lowpass filter.

Adding AUX4 and AUX5:

This circuit needs to be added for AUX4 and AUX5:



Devo8s - AUX4 & AUX5 add-on circuit

Aux4: Connect to CPU pin 34

Aux5: Connect to CPU pin 29

Adding a Vibration Motor

The motor is driven via a switching transistor from CPU PIN 83

See : [devo-8-adding-a-vibration-motor](#).

(<http://www.deviationtx.com/forum/how-to/1501-devo-8-adding-a-vibration-motor#7215>)

With this circuit provided by Hubi-Dirk

(<http://www.deviationtx.com/forum/how-to/1501-devo-8-adding-a-vibration-motor#8693>)

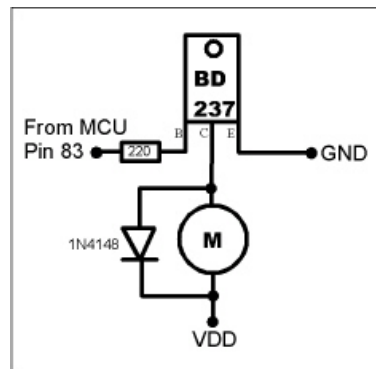


Figure 6. STM32F103xC and STM32F103xE performance line LQFP100 pinout

